


# FEMCard analysis result

20.10.15


Project data	
Projectname	viscoplastic_creep_relaxation_3D
Folder	F:\tmp_del\Demo_Projects\A_isotropic_material\B_viscoplastic_creep_relaxation\3D
Created at	07.06.2015
Maker	Parsolve GmbH
Comment	Synthetic measurement data
Material model	ISOTR   3D SMALL strain von MISES VISCOPLASTICITY (Cowper-Symonds, nonl. isotr. hardenin

## Test informations


### Test 1

Color	
Number	1
Name	Uniax_creep
Folder	F:\A_synth_meas\A_isotropic_material\B_viscoplastic_creep_relaxation\3D\Uniax_creep.txt
Load type	Isotropic   time-dependent   SMALL strain   UNIAXIAL   axial stress vs. axial and transverse sti
Weight T	6.52018

### Test 2

Color	
Number	2
Name	Uniax_Relax_A
Folder	F:\A_synth_meas\A_isotropic_material\B_viscoplastic_creep_relaxation\3D\Uniax_Relax_A.txt
Load type	Isotropic   time-dependent   SMALL strain   UNIAXIAL   axial stress vs. axial and transverse sti
Weight T	1

### Test 3

Color	
Number	3
Name	Uniax_Relax_B
Folder	F:\A_synth_meas\A_isotropic_material\B_viscoplastic_creep_relaxation\3D\Uniax_Relax_B.txt
Load type	Isotropic   time-dependent   SMALL strain   UNIAXIAL   axial stress vs. axial and transverse sti
Weight T	89.9607

## Tests weight TR

Test 1		
Start	End	Value
0	633	2.87
634	1266	1.73

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1267	1900	1.41
1901	2533	1.23
2534	3167	1.09
3168	3800	1

Test 2		
Start	End	Value
0	50	70.7
51	100	23.6
101	1000	1
1001	1900	1
1901	1950	17.7
1951	2000	17.7

Test 3		
Start	End	Value
0	50	4
51	100	1.33
101	150	1
151	200	1
201	250	1
251	300	1

## Tests weight SD

Test 1	
Strain direction	Value
$\varepsilon_{exp}^{xx}$	1
$\varepsilon_{exp}^{yy}$	2.18

Test 2	
Strain direction	Value
$\varepsilon_{exp}^{xx}$	1
$\varepsilon_{exp}^{yy}$	2.14

Test 3	
Strain direction	Value
$\varepsilon_{exp}^{xx}$	1
$\varepsilon_{exp}^{yy}$	2.49

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Model parameter					
Parameter	Fix	Lower limit	Upper limit	Start value	Result
E		1000	300000	30000	11400.48
PR		0.1	0.4	0.4	0.3099792
Y_0		10	200	40	33.74718
Y_inf		30	300	100	60.37674
Omega		50	800	200	113.4719
H		10	10000	1000	254.5075
D_pow		1e-06	10	0.001	3.655562e-05
n_pow		0.1	8	0.8	1.789887

Processing parameter	
Max. number of steps	200
LM start value	0.1
Max. error sum of squares	0.3

Processing results	
Steps	11
Least squares sum	0.197258

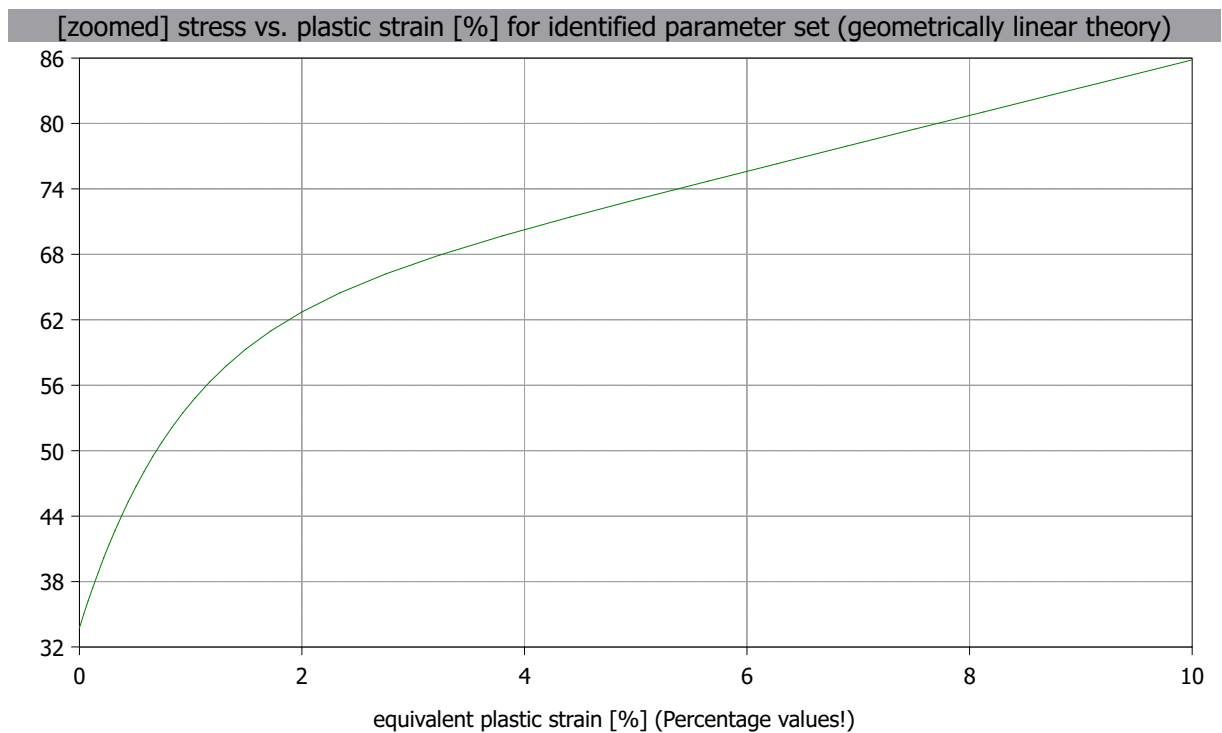
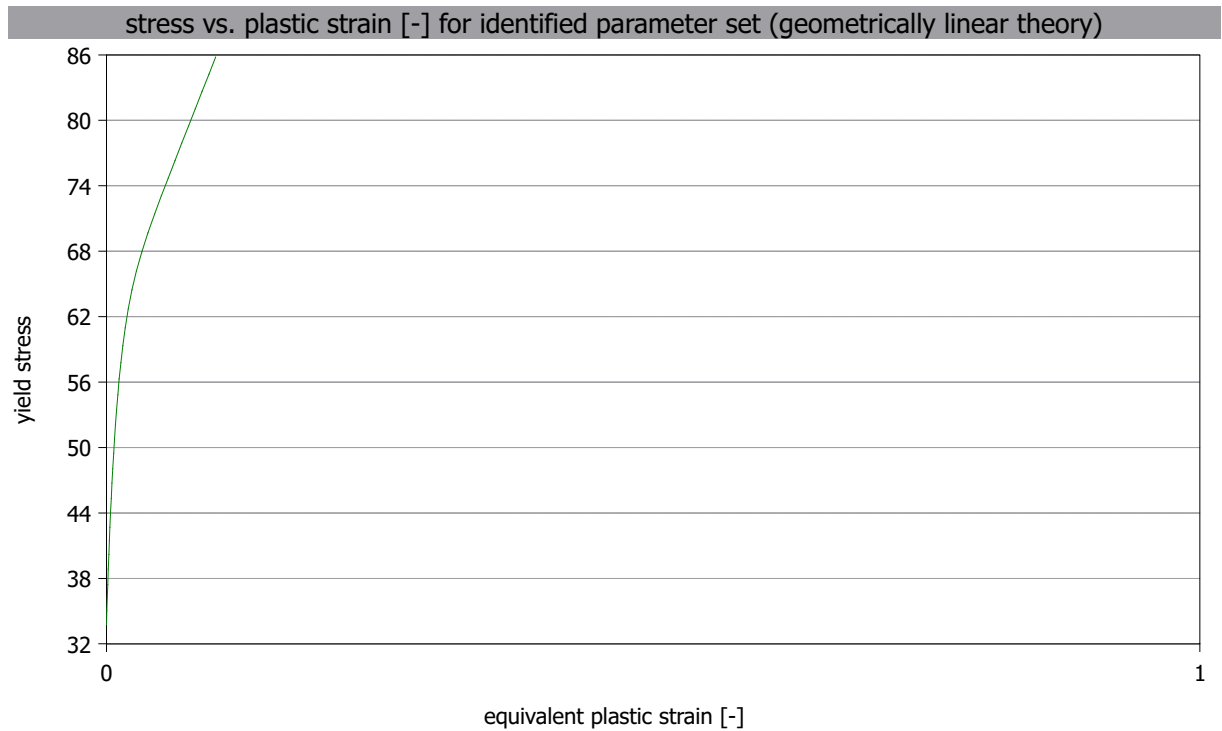
Correlation matrix								
	E	PR	Y_0	Y_inf	Omega	H	D_pow	n_pow
E	1	-0.751	-0.933	-0.532	0.624	0.408	-0.623	0.586
PR	-0.751	1	0.813	0.468	-0.547	-0.359	0.548	-0.517
Y_0	-0.933	0.813	1	0.716	-0.806	-0.593	0.707	-0.663
Y_inf	-0.532	0.468	0.716	1	-0.958	-0.945	0.701	-0.668
Omega	0.624	-0.547	-0.806	-0.958	1	0.926	-0.607	0.582
H	0.408	-0.359	-0.593	-0.945	0.926	1	-0.434	0.394
D_pow	-0.623	0.548	0.707	0.701	-0.607	-0.434	1	-0.986
n_pow	0.586	-0.517	-0.663	-0.668	0.582	0.394	-0.986	1

stress vs. plastic strain [-] for identified parameter set (geometrically linear theory)	
yield stress	equivalent plastic strain [-]
33.74718	0
35.03065	0.0004
36.26168	0.0008
37.4426	0.0012

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38.85167	0.0017
40.19003	0.0022
41.4616	0.0027
42.67005	0.0032
44.04176	0.0038
45.33324	0.0044
46.74559	0.0051
48.0637	0.0058
49.46392	0.0066
50.7603	0.0074
52.10579	0.0083
53.47413	0.0093
54.8418	0.0104
56.29479	0.0117
57.78147	0.0132
59.33967	0.015
60.97207	0.0172
62.71419	0.02
64.46064	0.0234
66.20037	0.0275
67.94874	0.0324
69.69099	0.038
71.42183	0.0441
73.09004	0.0503
74.71266	0.0565
76.31271	0.0627
77.90159	0.0689
79.48495	0.0751
81.06558	0.0813
82.64485	0.0875
84.22345	0.0937
85.80172	0.0999

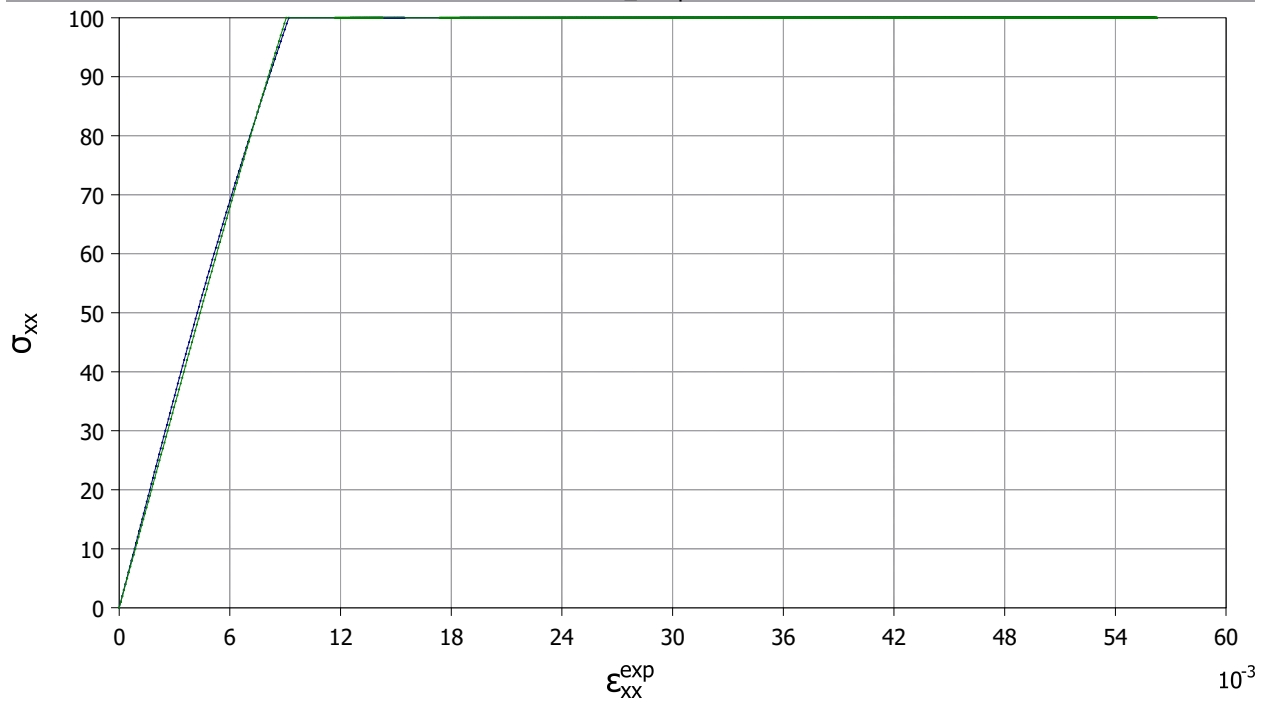


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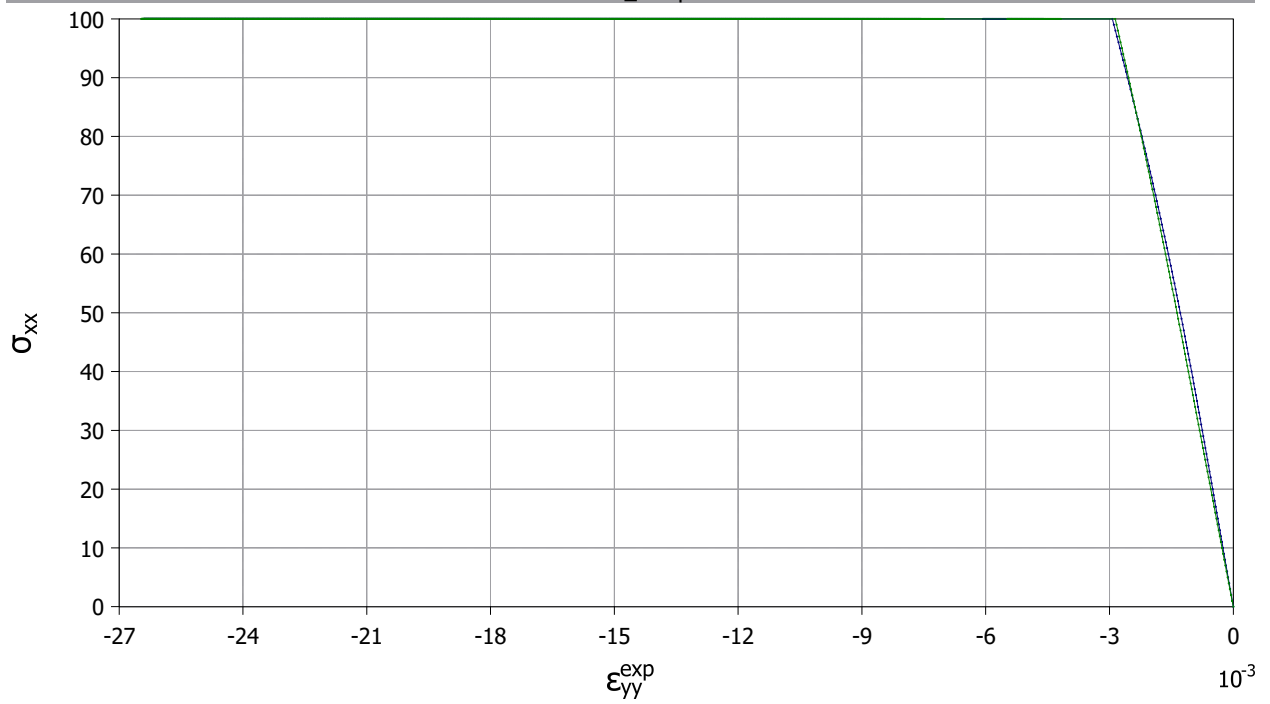
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## Verification

Uniax\_creep

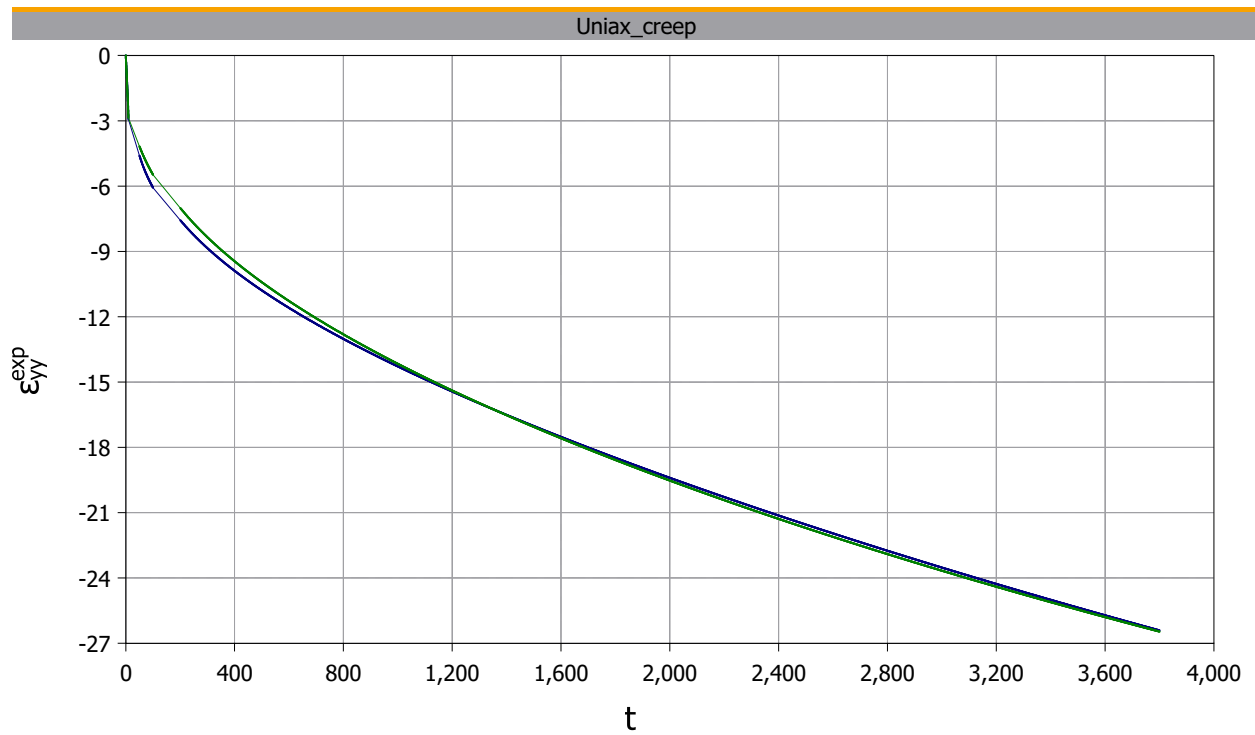
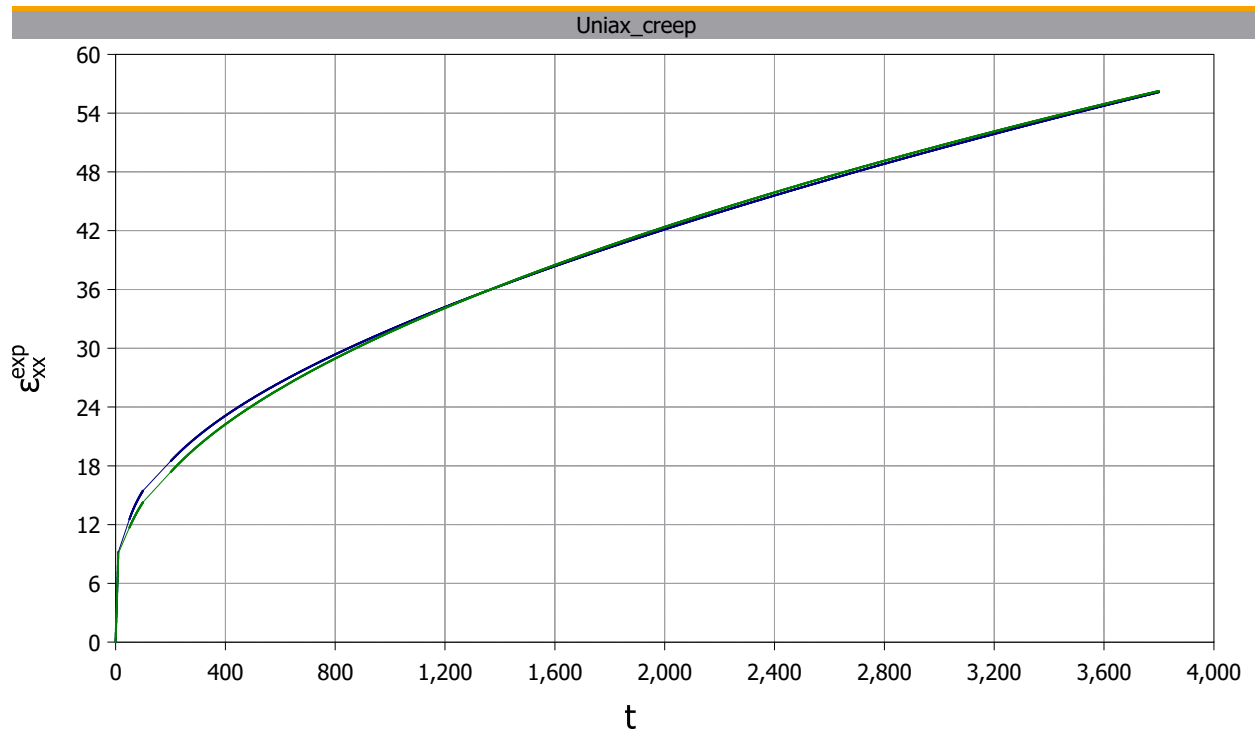


Uniax\_creep



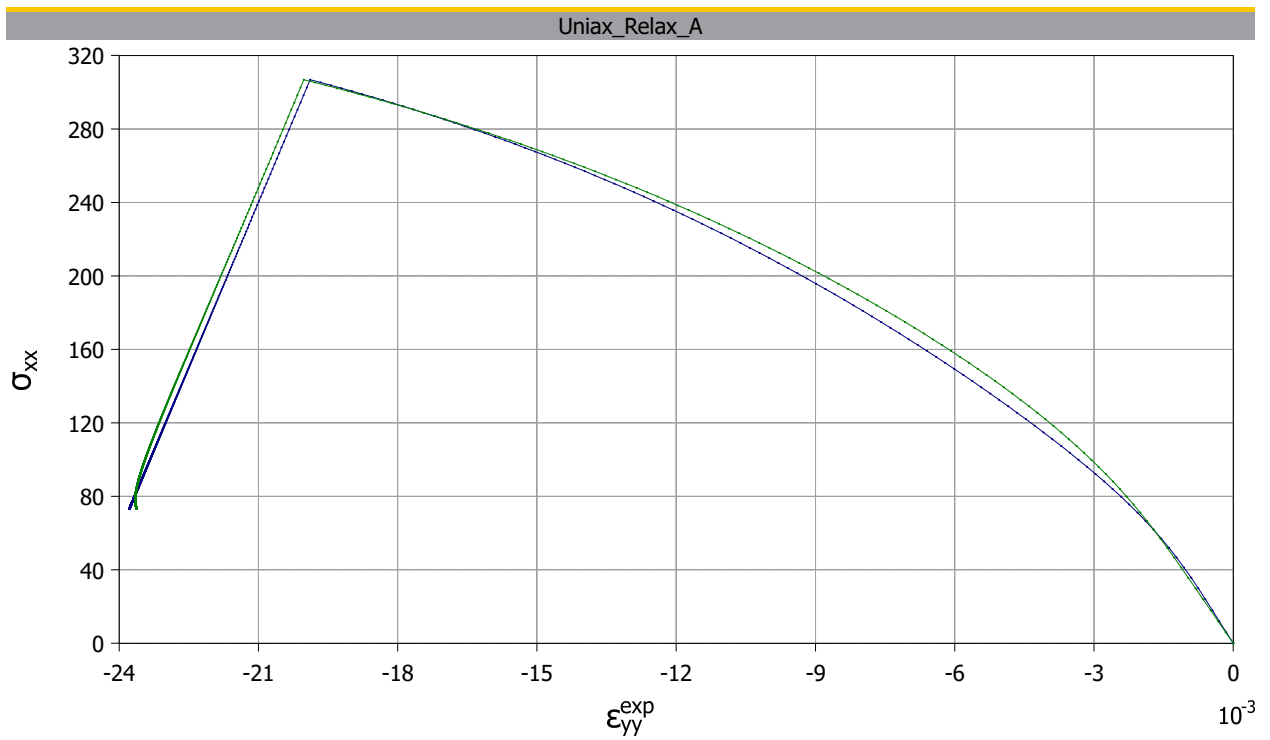
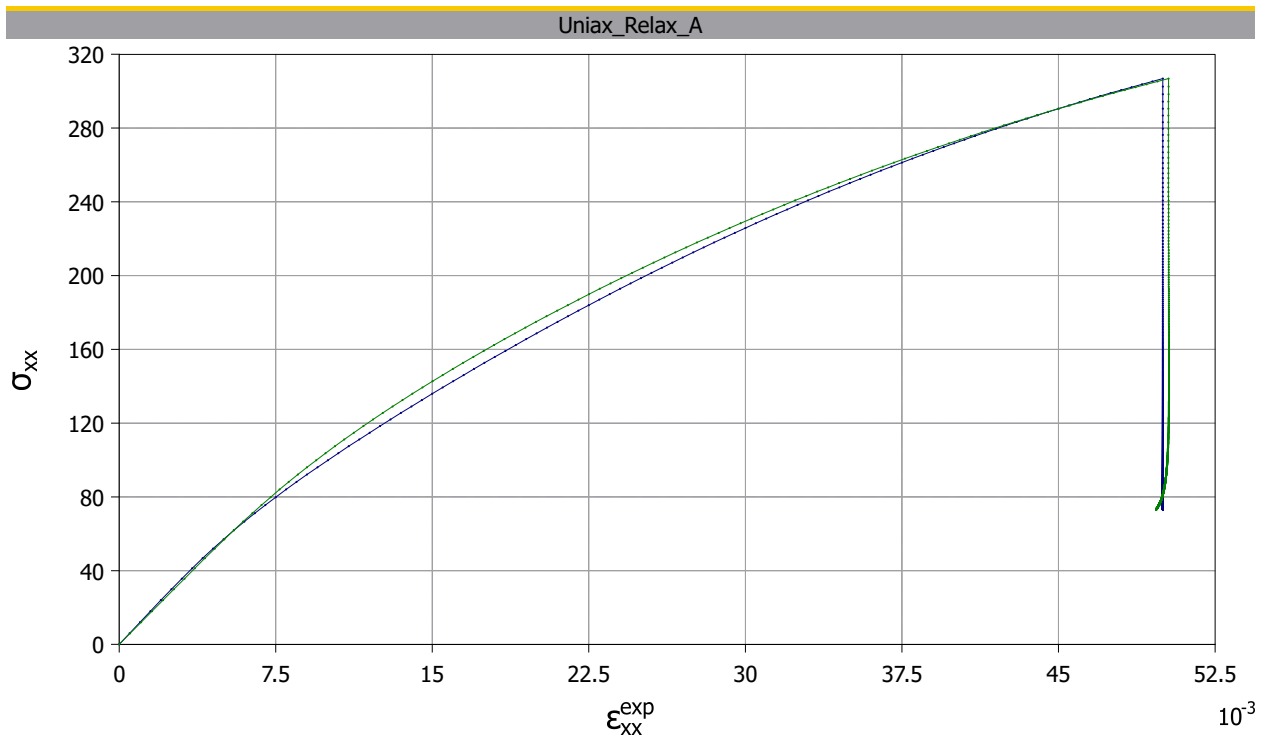
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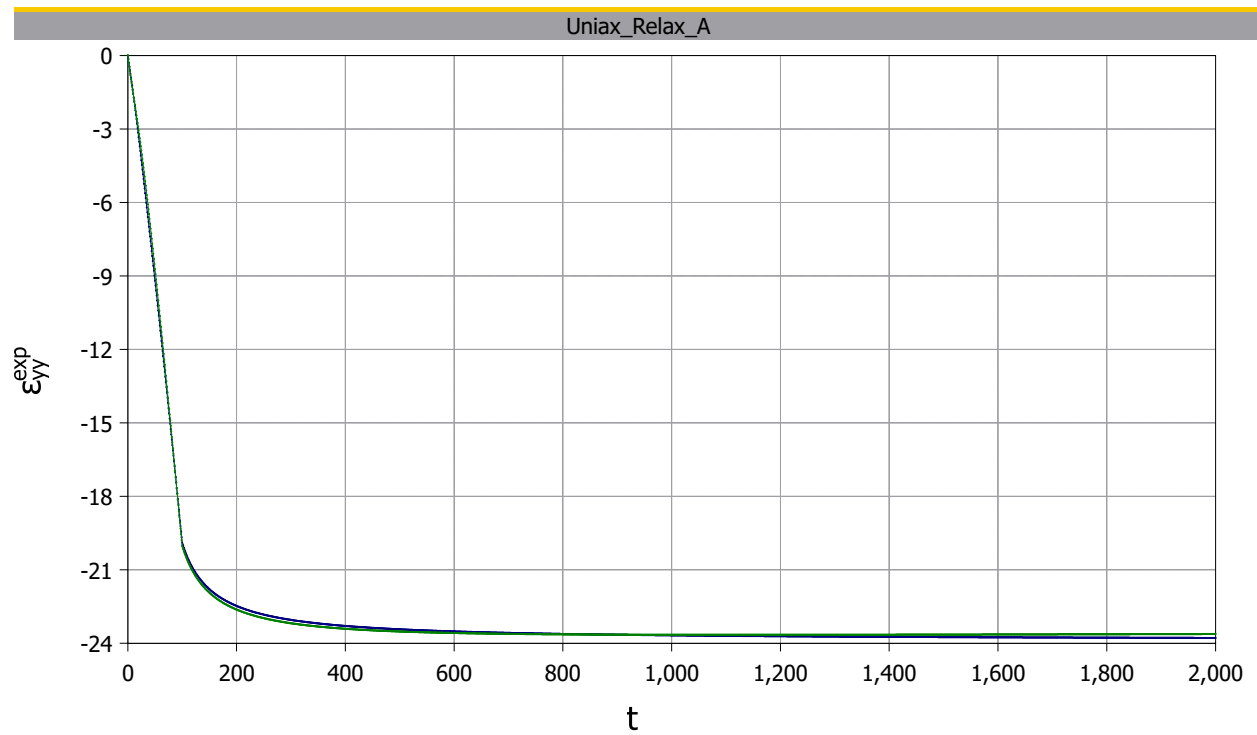
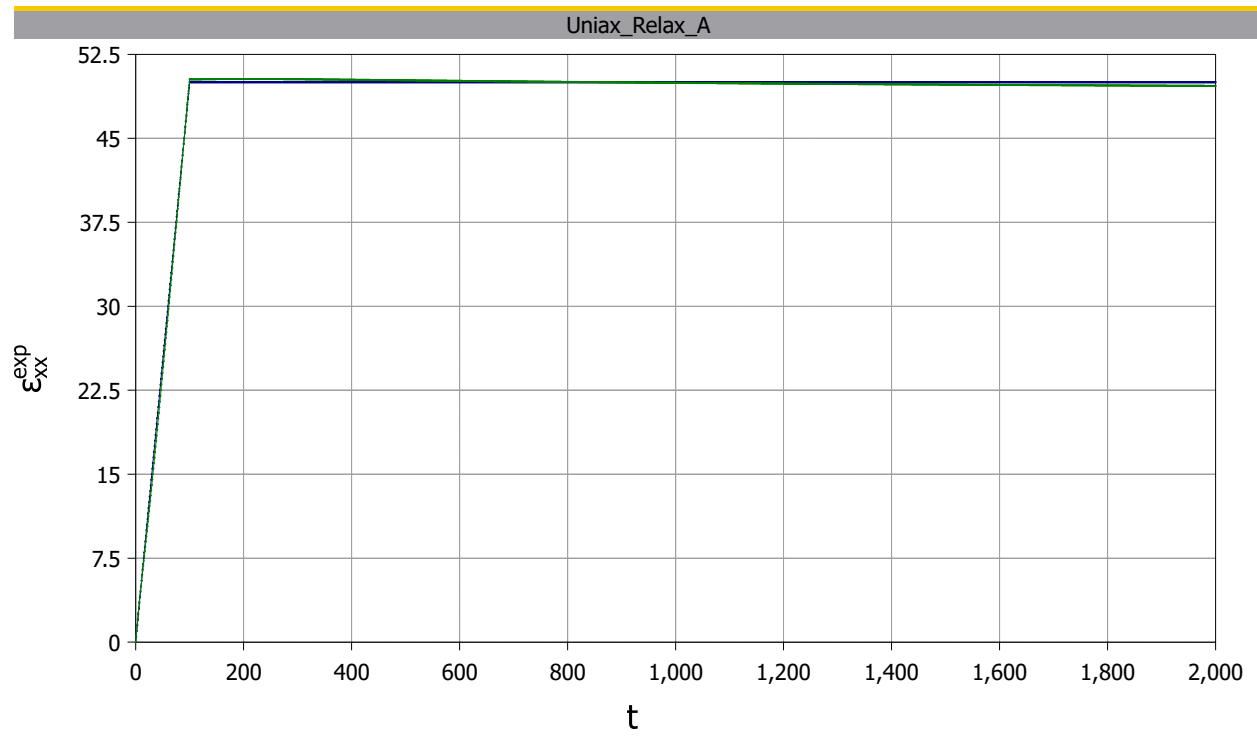
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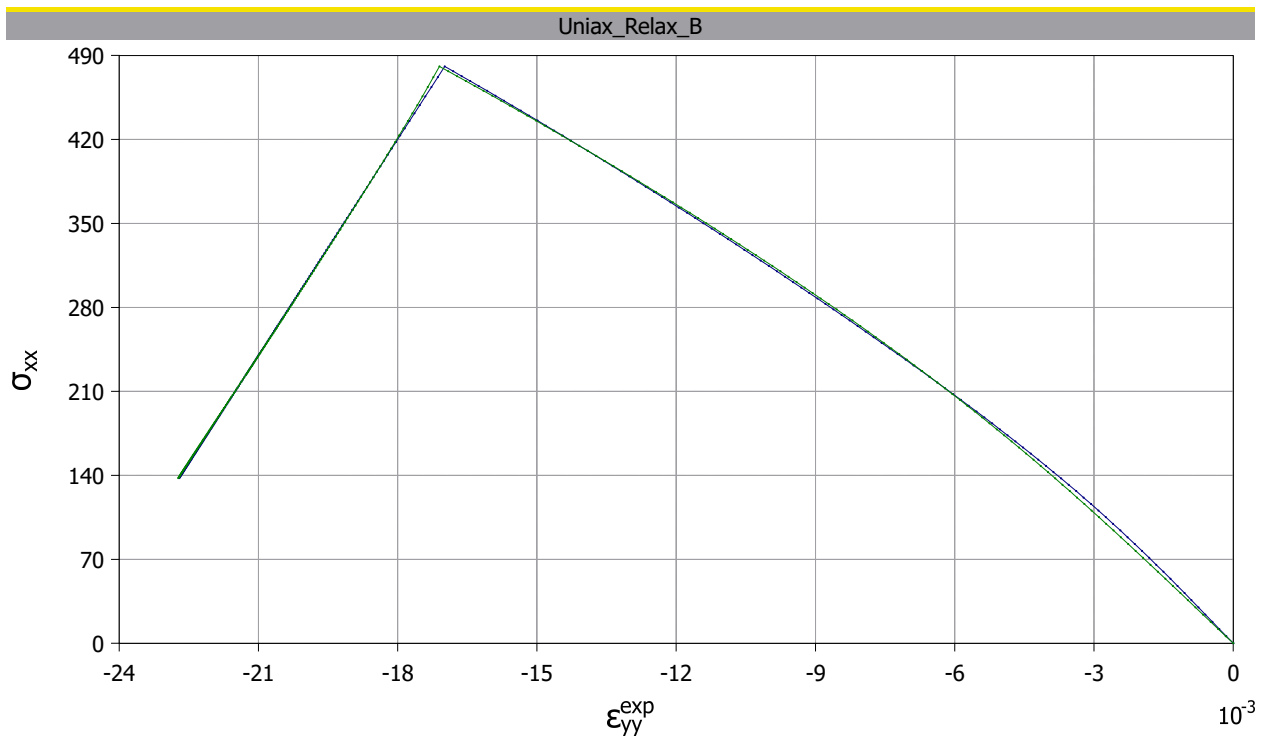
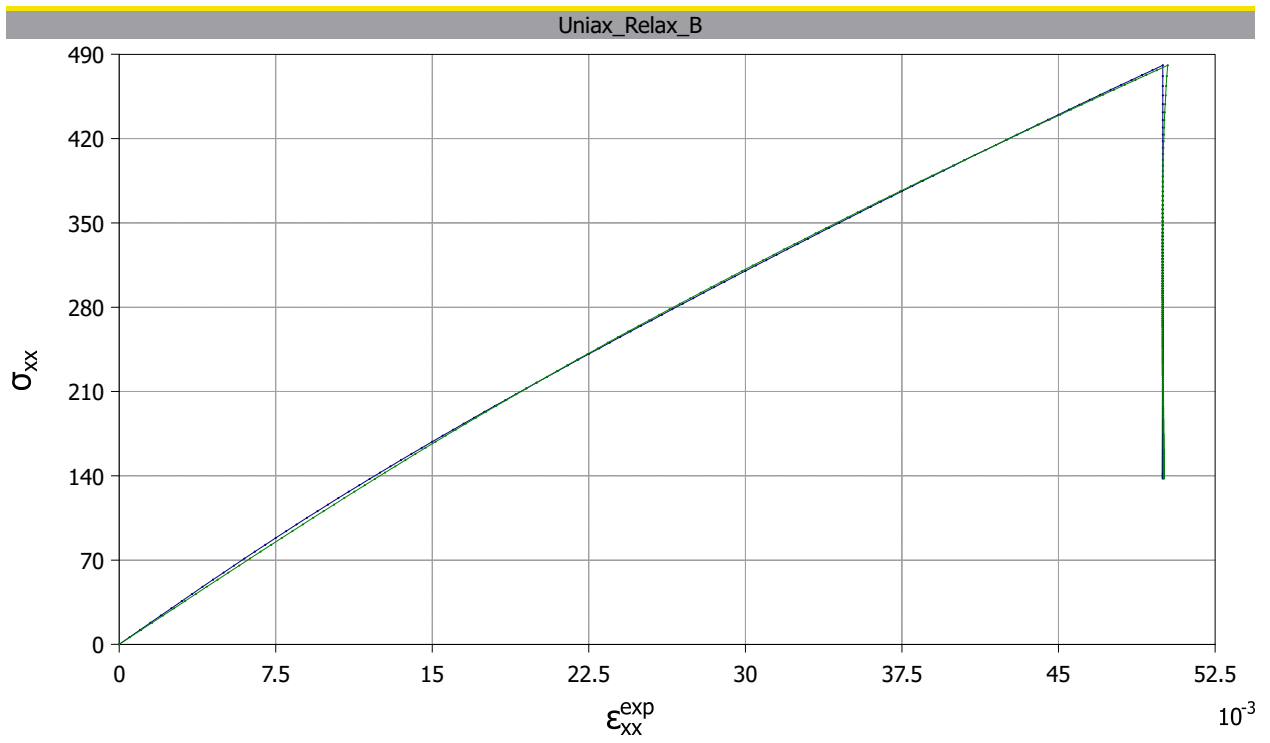
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